

## APPENDIX 5.2.1.

### GENERAL RECOMMENDATIONS ON DISINFECTION

#### Article 5.2.1.1.

~~Specific disinfection methods are provided in Chapter 1.1.5 of the *Aquatic Manual*.~~

#### ~~Article 5.2.1.2.~~

~~Disinfection is employed as a common disease management tool in aquaculture. It may be used for disease prevention, control or eradication and to prevent the spread of infectious agents into and from an aquaculture establishment. Disinfection procedures should be part of a disinfection programme designed for a specific purpose. Disinfection may consequently be used as a routine practice in biosecurity programmes designed to eradicate or exclude specific diseases from aquaculture establishments, as well as a routine sanitary measure employed to reduce disease incidence within aquaculture establishments.~~

~~Disinfection of installations and equipment (including vehicles and boats) should be carried out in areas where and according to procedures and methods such that the risk of contaminating contamination of other water and other aquatic animal populations with infectious material is avoided. For example, organic material generated/removed during the cleaning process, such as pond sludge, etc., should be disposed of in an appropriate manner that prevents spread of disease by such material and is environmentally safe. There is a great variety of products and processes procedures for washing and disinfecting installations or equipment, including vehicles and boats, that can be used in aquaculture establishments. The decision on which product to use should take into account correct choice of such products will depend on their efficacy, their safety for potential effect on aquatic animals and the environmental impact, and costs induced by their use. Disinfection procedures should be part of a disinfection programme that establishes the best and appropriate available methods to prevent the entry or decrease the load of targeted pathogens in an aquaculture establishment.~~

~~Following disinfection or stamping out, the aquaculture establishment should be restocked from a disease-free source.~~

#### Article 5.2.1.23.

~~Disinfectants are chemical substances acting on micro-organisms and their vital cellular processes, either by controlling their multiplication or by killing the agent. There are two main groups:~~

- ~~1) Oxidative disinfectants (chlorides, iodides, iodophores) of high germicide power and action scope. These have a corrosive and irritant effect on surfaces and mucosa. The iodine present in iodophores is associated with other elements that improve their action by giving them the humectant properties of detergents.~~
- ~~2) Disinfectants of with selective actions (quaternary ammonia, phenols, formaldehyde and alcohol) that act on the cell membrane of the micro-organisms. Their germicide action depends on the dose. The higher the resistance of the micro-organisms to be controlled, the higher the disinfectant concentrations required.~~

The efficacy of *disinfection* is affected by various factors, including temperature, pH, and the presence of organic matter, and the manufacturer's instructions for effective use should be followed. ~~Temperature is a determinant factor in the action of disinfectants.~~ At high temperatures, the disinfecting action is faster as long as the decomposition limit of the product is not reached. Similarly, pH also affects the action of *disinfectants*. For example, quaternary ammonia is more efficient at alkaline pH while iodine and iodophores are more efficient at neutral or acid pH.

Special attention ~~ought to~~ should be paid to organic ~~matters~~ material and greasy substances that can significantly reduce the efficacy of the *disinfectant*. ~~Therefore, surfaces should be~~ It is recommended to cleaned thoroughly ~~the surfaces to be disinfected before applying *disinfectants*, as their actions can drastically decrease due to the presence of these elements.~~

The ~~safe~~ use of *disinfectants* may require ~~entails the implementation of~~ measures to protect personnel, ~~and cultured aquatic animals and to mitigate the environmental effects and the manufacturer's instructions for safe use should be followed.~~ It is first necessary to protect the skin and eyes from contact with dangerous substances by using impermeable clothing, rubber boots, glasses and a hat. The respiratory tract must be protected by wearing a mask and the operator must not touch any food or smoke without having thoroughly washed his/her hands. Finally, the *disinfectants* must be stored in a way that presents no direct or indirect danger to animal or human life and the environment.

Approved procedures for the use of *disinfectants* in aquaculture should be established. ~~An approval scheme should consider the *disinfection* effectiveness against target pathogens, toxicological and ecotoxicological properties of the *disinfectants*.~~

#### ~~Article 5.2.1.4.~~ (move to the Aquatic Manual)

~~The choice of *disinfection* procedures depends on the size, type and nature of the materials and facilities to be disinfected. The range of surfaces to be disinfected consists of fabric or woven material (clothes, nets), hard surfaces (plastic, cement) or permeable materials (earth, gravel). *Disinfection* is more difficult on permeable surfaces and requires more time.~~

~~*Disinfection* procedures must be established and used according to the objectives of *disinfection* and identified risks. Diseased *aquatic animals*, mortality fluids and tissues (viscera, blood, mucus, faeces, and effluent waters) and their association to equipment and workers are risk factors in the transmission of pathogens that could eventually infect healthy aquatic animal populations.~~

~~Basic *disinfection* protocols include the removal of all *aquatic animals*, dead and alive from the facility, a cleaning programme that is designed to eliminate all the remaining organic matter adhering to the surfaces, the use of *disinfectants* on equipment and installations and a final neutralisation step of chemical products.~~

~~When removing animals from the facilities prior to *disinfection*, the direct disposal of diseased populations of *aquatic animals* of any life stage or age into receiving waters is a dangerous practice that facilitates the spread of *disease* from farmed to wild populations or to neighbouring farms that use the same water supply. Such disposal should not be permitted. When the decision is made to discard a population due to the presence of *disease*, the stock in the tank or pond should be harvested and/or humanely killed in the tank or pond. The water in the tank or pond should be disinfected (see specific sections in Chapter 1.1.5 of the *Aquatic Manual*) prior to discharge. The emptied tank or pond should be disinfected prior to restocking.~~

#### Article 5.2.1.3.

Specific *disinfection* procedures are provided in Chapter 1.1.5. of the *Aquatic Manual*.